

An Empirical Study of an Extended Theory of Planned Behaviour Model for Pirated Software Purchase

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In recent years, the widespread use of computer and Internet becomes more ubiquitous in our everyday life, but the situation of software piracy has become increasingly serious. In this study, Ajzen's (1991) Theory of Planned Behaviour (TPB) is used as a theoretical framework to extend prior research pirated software purchasing behavior among students in Malaysia. Data were collected through self administered questionnaire. The hypothesis model incorporates social factors and habits into the basic TPB model. This paper uses multiple regression analysis to indentify the factors affecting pirated software purchasing behavior with a questionnaire of 419 students. The multiple regression analysis results indicate that all factors except perceived behavioural control have positive and significant impact on pirated software purchasing behavior of Malaysian students.

Field of Research: Marketing

1. Introduction

Software piracy is describes as the unauthorized copying or distribution of copyrighted computer software. Software piracy can be done by copying, downloading, sharing, selling or installing multiple copies onto personal or work computer more than the stipulated authorization. Every year billions of dollars is estimating losses by software industries. According to Business Software Alliance (BSA) total dollar from software piracy rose by \$8 billion to nearly \$48 billion from 2006 to 2007 worldwide.

A survey by BSA and IDC found that Malaysian software piracy dropped by one percent point from 60% in 2006, to 59% in 2007, in which the global piracy rate dropped in most countries and total losses by Malaysian software industry due to software piracy rose to US\$311 million in 2007 (BSA). BSA study also reveals that highest-piracy countries in the world in 2007 were Armenia (93%), Bangladesh (92%), Azerbaijan (92%), Moldova (92%), Zimbabwe (91%), Sri Lanka (90%), Yemen (89%), Libya (88%), Venezuela (87%) and Vietnam (85%). Among the lowest-piracy countries were United States (20%), Luxembourg (21%), New Zealand (22%), Japan (23%), Austria (25%), Belgium (25%), Denmark (25%), Finland (25%), Sweden (25%), and Switzerland (25%).

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The main purpose of the study was to provide data on the pirated software knowledge, attitudes and usage behavior of undergraduate students enrolled at a public university in Klang Valley in Malaysia. In addition, the research sought to add to the body of literature by utilizing other theoretical model of software piracy research.

The results of this study will be able to help the software industries to better understand what influences the consumers to purchase pirated software. The study also hopes to be able to shed some light on government agencies who are trying very hard to protect software piracy. It is important for them to recognize the factors so that they can enforce their laws. The results obtain from this study can be applied and manipulated by businesses in planning their strategies. The software will be more knowledgeable in the software piracy and the preference of consumers.

The organization of this article is as follows: a literature review is conducted to develop theoretical framework that are tested, followed subsequently by methodology and results analysis. Marketing implications and limitations of the results are also discussed.

2. Theoretical Framework

2.1 Theory of Planned Behavior (TPB)

There are some questions as to the applicability of TPB model in pirated software purchasing. Theoretically this is difficult to answer. We see this issue as more of an empirical question; do the testable implications hold up empirically?

In 1991 TPB model was developed by Ajzen. TPB (Ajzen, 1985, 1991) is an extension of the theory of reasoned action (TRA) (Ajzen and Fishbein, 1985) and it has been used by researchers over the past 20 years and shown to be able to predict a variety of intentions and behaviors. Ajzen (1991) stated that a person's action is determined by behavioral intentions, which in turn are influenced by an attitude toward the behavior and subjective norms. In addition to attitude toward the behavior and the subjective norm in the TPB, perceived behavioral control (PBC) can influence intention as well. PBC influences the individual's decision through behavioral intention. Armitage and Conner (2001) empirical studies had been supported this theory. They found that the TPB accounted for 27 percent and 39 percent of the variance in behavior and intention, respectively. Among the TPB constructs, intention was a better predictor of behavior. An attitude towards a behavior is positive or negative evaluation of performing that behavior and perceived behavioral control is informed by beliefs about the individual's possession of the opportunities and resources needed to engage in the behavior (Ajzen, 1991).

An underlying premise of the current study is that beliefs about the intent to use pirated software, made necessary by the latter model's inability to deal with behaviours over which individuals have incomplete volitional control. Volitional control represents the degree to which a behavior can be performed at will (Blackwell et. al., 2006). Behavior that is not consciously considered cannot be explained by this theory. The TPB model

explains an individual's performance of a certain behavior is determined by his or her intent to perform that behavior. For TPB, attitude towards the target behavior and subjective norms about engaging in the behavior are thought to influence intention pirated software purchasing behavior, and TPB includes perceived behavior control over engaging in the behavior as a factor influencing intention and purchasing behavior. In the context of technology-based behaviors, perceived behavioural control (PBC) has been found to correlate well with perceived ease of use or difficulty related to a particular technology, which have been shown to be major factors predicting intention to use that technology (Compeau and Higgins, 1995). It was postulated that the easier a system is to use, the greater the belief that the system will support information needs.

Two new constructs, social factors and habits, are added to the model in our study as social and personality factors influencing consumer attitudes (Eining and Christensen, 1991; Loch & Conger, 1996).

2.2 Research Model and Hypotheses

The research model used in this study is shown in Figure 1. The intention of pirated software purchasing preceded the process before actual purchase. Intention reflects future behavior. Attitude is postulated to have a direct relationship with intention behavior. The relationship between subjective norms, behavioral control, social factors and habits are also posited as a direct relationship here.

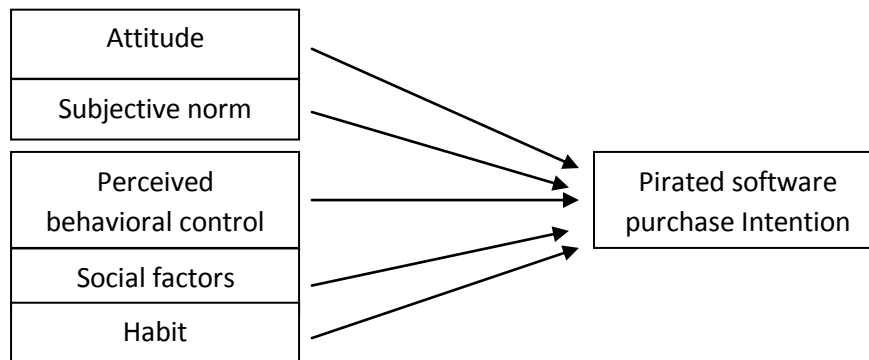


Figure 1. A Schematic diagram of the conceptual framework

To examine the relationship between the independent variables (attitude, subjective norm, perceived behavior control, social factors and habits) and the dependent variable (behavioral intention in purchasing pirated software) five hypotheses were developed. The directionality stated in each hypothesis is derived from the previous researches which are conducted on the basis of TPB and other research. Therefore, this study has to find out whether there is a direct positive relationship between attitude, subjective norm, perceived behavior control, social factors, habits and behavioral intention.

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Behavioral intentions are factors that capture how hard people are willing to try to perform a behavior (Ajzen, 1991). Attitude is the evaluation of performing a particular behavior involving the attitude object, such as buying the product (Blackwell et. al., 2006). Attitude refers to the degree to which a person has favorable or unfavorable evaluation or appraisal of the behavior in question. As a general rule, the more favorable the attitude and subjective norm with respect to a behavior, and the greater the perceived behavioral control, the stronger should be an individual's intention to perform the behavior under consideration. The relative importance of attitude, subjective norm, and perceived behavioral control in the prediction of intention is expected to vary across behaviors and situations (Ajzen, 1991). According to the expectancy-value model, attitude toward a behavior is determined by the total set of accessible behavioral beliefs linking the behavior to various outcomes and other attributes. Therefore, attitude can be considered as an important part of predicting and describing human behavior (Ajzen, 1988). Thus the following hypothesis needs to be substantiated:

H1: There is a significant and positive relationship between attitude and intention to purchase pirated software.

The predictor social factor termed subjective norm is the perceived social pressure to comply with expectations about engaging in the behavior should influence the individual's intention to perform or not to the behavior. If social expectations are that people should perform in the behavior in question, then the individual should be more likely to do so. Conversely, if social expectations are that people should not perform in the behavior, then the individual should be less likely to do so. In this case, if purchasing of pirated software is seen as socially desirable behavior, based on what important others think about it, then the individual is more likely to make pirated software purchase. In this study, subjective norm is the perceived social pressure that influences on consumers' decision to purchase pirated software, for this context we propose:

H2: There is a significant and positive relationship between subjective norm and intentions to purchase pirated software.

According to Ajzen (1991) perceived behavioral control is the extent to which a person feels able to engage in the behavior. It has two aspects: how much a person has control over behavior; and how confident a person feels about being able to perform or not perform the behavior. It is determined by individual's beliefs about the power of both situational and internal factors to facilitate the performing of the behavior. The more the control an individual feels about making pirated software, the more likely he or she will be to do so. In this study, perceived behavioral control is the ability to purchase pirated software. Therefore, the hypothesis is:

H3: There is a significant and positive relationship between perceived behavior control and intention to purchase pirated software.

Perceived social pressure to perform or not to perform a behavior affects intentions (Ajzen and Fishbein 1975; Triandis 1980). Perceived social pressure refers to an

individual's perception of whether most people important to them think that the behavior should be performed or not. Therefore, we view social factors as those norms, roles, and values at the societal level that influences an individual's intentions to pirate software. In this context, the norms and values that are conveyed through interaction with friends, colleagues, and family members are all examples of social factors. These interactions can be in the form of comments, suggestions or directives. Researchers found that social norms as a separate factors that influence intentions of unethical behavior (Eining and Christensen, 1991; Loch & Conger, 1996; Simpson, Banerjee & Simpson, 1994; and Al-Jabri & Abdul-Gader, 1997). Cheng, Sims and Teegen (1997) found in their study and the individuals stated that "most people I know copy software" as a top reason for pirating software. Therefore this study also expects that there will be a positive relationship between social factors and intentions to pirate software:

H4: There is a positive relationship between social factors and intentions to pirate software.

According to Triandis (1980) habits are situation-behavior sequences that are or have become automatic and that occur without self-instruction. Habits affect not only an individual's behavior but attitude as well. Habits are a function of an individual's past experience and ability to accomplish specific tasks. According to Hunt and Vitell (1986) personal experiences affect ethical behavior. Therefore, this study expects habit to influence individuals' piracy of software and to enhance their affect regarding such a behavior. Therefore:

H5: There is a positive relationship between habit and software piracy behavior.

3. Method

3.1 Sample

The sampling frame used in this study was distributed to undergraduate students representing the faculty of business and management area. For this study student sample was used because they are more inclined to purchase pirated software (Wang et al., 2005) as the students, many of whom have "no job, no assets, no income, no credit history and no means of supporting themselves" (Susswein, 1995) are the target of an aggressive marketing campaign by the pirated software industry. There were about 900 students in this group and a sample size of 500 was considered sufficient for this size of target population (Sekaran, 2003). Survey questionnaires were personally distributed and collected from the respective respondents, yielding a response rate of 100%. But due to missing value for more than one section 81 questionnaire were discarded from the study and finally 419 respondents were retain. The sample consisted of more females (67.68 percent), with an average age of 22 years. Chinese group was the highest contributors of the total respondents (51.07 percent) and the second highest group is represented by Malays with (30.07 percent).

3.2 Instrument Development

The survey instrument used for data collection was developed by the research after a literature search yielded no suitable existing instrument. A review of questionnaires used in previous studies on student's usage behavior, generated concepts and questions for the development of an instrument. The questionnaire was pretested several times within the faculty from three departments to establish face validity of the items. The aim of the pretest was to prevent any vagueness and misunderstanding with minor adjustment to the wording and sequence of the questions. The revised questionnaire was then administered to respondents with a cover explaining the academic purpose of the study (Obasi, 1999). Questionnaire also allows people time to think about the questions which result in more meaningful answers (Peil et al., 1982).

The first section was designed to collect demographics data, pertaining to age, gender, and race. The second section is a question related to the attitude towards pirated software usage using a Likert scale ranging from 1= strongly disagree to 6 = strongly agree.

3.3 Reliability

The internal reliability of the items was verified by computing the Cronbach's alpha (Nunnally, 1978). She suggested that a minimum alpha of 0.6 sufficed for early stage of research. The Cronbach alpha estimated for intention was 0.734, attitude was 0.821, subjective norm was 0.736, perceived behavioural control was .687, social factor was .765 and habits scale was 0.757. As the Cronbach's alpha in this study were all much higher than 0.6, the constructs were therefore deemed to have adequate reliability.

3.4 Normality of Data and Multi-Collinearity

This study involves a relatively large sample (419 respondents) and therefore, the Central Limit Theorem could be applied and hence there is no question on normality of the data. Two major methods were utilized in order to determine the presence of multicollinearity among independent variables in this study. These methodologies involved calculation of both a Tolerance test and Variance Inflation Factor (VIF) (Kleinbaum et al, 1988). The results of these analyses are presented in Table I. As can be seen from this data, i) none of the Tolerance levels is greater than or equal to .01; and ii) all VIF values are well below 10. Thus, the measures selected for assessing independent variables in this study do not reach levels that indicate multicollinearity. The acceptable Durbin – Watson range is between 1.5 and 2.5. In this analysis Durbin – Watson value of 1.813, which is between the acceptable ranges, shows that there are no auto correlation problems in the data used in this research. Thus, the measures selected for assessing independent variables in this study do not reach levels indicating multicollinearity

Table I: Test of Collinearity

Variable	Tolerance	VIF
Attitude	.800	1.249
Subjective norm	.416	1.403
Perceived behavioural control	.454	2.202
Social factors	.663	1.507
Habits	.807	1.103

4. Hypotheses Testing

Table II presents results of a multiple regression analysis used to evaluate the strength of the proposed relationship. Five hypotheses were formulated and all the variables retain after testing the reliability. The individual hypotheses were tested using a multiple regression prediction model following the guidelines established by Hair et al., (1998) with pirated software purchasing intention as the dependent variable. The results obtained, as shown in Table II, revealed that H1, H2, H4 and H5, were found to be significant in the prediction model. The results provide support for hypotheses H1, H2, H4 and H5 that is, the relationship between attitude ($\beta=.273$; $p<0.001$), subjective norm to intention ($\beta=.300$; $p<0.001$), social factors ($\beta=.216$; $p<0.001$), and habits on intention ($\beta=.180$; $p<0.001$).

Table II: Regression Results

Variables	Beta	t-value	p-value
Attitude	.273	5.538	.001***
Subjective norm	.300	4.390	.001***
Perceived behavioural control	.080	1.217	.225
Social factors	.216	3.981	.001***
Habits	.180	3.879	.001***

R-squared = 0.535, Adjusted R-squared = 0.525, (*) $p<.05$, (**) $p<.01$, (***) $p<.001$
 Dependent Variable: Pirated software purchasing intention

5. Discussion

The study depicted that attitude has a significant and positive effect on pirated software purchasing intention. Attitude is an important factor in influencing consumer intention in purchasing pirated software because those with high positive attitudes appeared to have greater intentions to intent to purchase pirated software. Social pressure may compensate for high favorable attitudes in building intentions to purchase pirated software in such culture. This analytical result is generally consistent with previous studies (Huang et al., 2007).

Notably, examination of the relative strengths of the associations between the individual independent variables and pirated software purchase intention clearly indicate that subjective norm, social factors and habits can explain much of the variation in pirated

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software purchasing intention (Huang et al., 2007; De Matos et al., 2007; Lau, 2003; Ferrelland and Gresham, 1985; Limayem et al., 2004). In other words, students those using software, the perception of subjective norm, social factors and habits are the better predictors relating to pirated software purchase.

Regarding the variable perceived behavioural control, there is not any direct and significant relationship with the intention of purchasing pirated software. Therefore, H3 was not supported by the data. This result is in contradiction on the previous studies done by other researchers (Peace et al., 2003). The possible explanation is that, students have more knowledge about software, so that they make decision based on their own experience and knowledge, considering little about others' opinions.

6. Marketing Implications

The results of this study demonstrate that different users make decision on using pirated software based on different considerations (Huang et al., 2007), which suggests that government should design different measures to different users in order to suppress software piracy. It important, the government should enforce copyright laws on students, especially at the university level, because their piracy behaviors are influenced by perceived legal punishment. Government also must create awareness to the students employing advertisement and other way to communicate with these students about the bad side of the pirated software usage.

7. Limitations and Future Directions

It is necessary to recognize the limitations of the current study. Firstly, since the survey was conducted to a group of students from one university, the results should be interpreted with caution, particularly with respect to the generalization of research findings to Malaysian consumers as a whole. Next, the sample size itself is relatively small. To accurately evaluate Malaysian consumers' pirated software purchasing behaviour, a larger sample size is desirable.

Future research needs to focus on a larger cross section of computer users and more diversified random samples to verify the findings of the current study. Moreover, to further clarity of the factor influence on pirated software purchasing intention, Technology Acceptance Model (TAM) and or other behavioral model could be used. Future inquiries could also examine the causal relationships between factors and consumers' pirated software purchasing behaviour by employing a structural equation modeling technique. In addition, future research needs to examine business-to-business purchase in the context of cross-national and cross cultural differences.

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